

# Weather Issues and Needs for Railroads

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# Weather Events Affecting Railroad Operations

- Crosswinds/high winds
- Hurricanes
- Tornadoes
- Flash floods and washouts (Arizona)
- River flooding (1993 Midwest)
- Mudslides
- Sun kinks, track buckling -derailments (Aug. 1998 Texas)
- Rate of change of track temperature
- Brittle track (winter cold)
- Snowstorms
- Avalanches
- Mode shifts during extreme weather (Amtrak '96 blizzard)
- Fog: depth and duration
- Lightning (June 1999 CSX)
- Catenaries(winter icing, summer heat sag)
- Cold weather - air brake freeze-up

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# Current Weather Information Used by Railroads



- Almost all types of weather info
- Used for both seasonal planning and short term operating decisions
- Operating procedures linked to weather events
- Services provided by commercial meteorologists



# Future Weather Information Needs and Roles for Railroads

- As a Provider
  - ◆ Wayside bungalows - data collection
  - ◆ Railroads building data networks
  - ◆ Trains as mobile weather data collection platforms
- As a User
  - ◆ Railroads make operational decisions. FRA only monitors impacts
  - ◆ Better hydro models data and QPF for floods/flash floods
  - ◆ Better 3 month/seasonal forecasts
  - ◆ Higher resolution (time and space) short term forecasts
  - ◆ Other environmental (earthquakes, wind fields/dispersion)